

So why even do this, other than the obvious reason which is FUN!

Well, remember LCM (lowest common multiple) and Common Factors? Prime factors can make that easy

Use the prime factors to find the first 3 common factors, and 3 lowest common multiples.

$$36 = 2 \times 2 \times 3 \times 3$$

$$60 = 2 \times 2 \times 3 \times 5$$

First pair of common prime factors

$2 \times 2 \times 3$ is common. THIS MEANS that 2, and 3 are common factors, and so are 2×2 (4), 2×3 (6), and $2 \times 2 \times 3$ (12)

The LCM will be the COMMON FACTORS \times REMAINING FACTORS

second pair of common prime factors

$$2 \times 2 \times 3 \times 3 \times 5 = 180$$

The second lowest multiple is 2×180
the third is 3×180

Use the prime factors from questions 2 and 3.

Find all the common factors of each pair of numbers

a) 55, 88

$$\begin{array}{c} 55 \\ / \quad \backslash \\ 5 \times 11 \end{array}$$

$$\begin{array}{c} 88 \\ / \quad \backslash \\ 2 \times 44 \\ / \quad \backslash \\ 2 \times 22 \\ / \quad \backslash \\ 2 \times 2 \times 11 \end{array}$$

b) 48, 120

$$\begin{array}{c} 48 \\ / \quad \backslash \\ 2 \times 24 \\ / \quad \backslash \\ 2 \times 12 \\ / \quad \backslash \\ 2 \times 6 \\ / \quad \backslash \\ 2 \times 2 \times 2 \times 3 \end{array}$$

$$\begin{array}{c} 120 \\ / \quad \backslash \\ 2 \times 60 \\ / \quad \backslash \\ 2 \times 30 \\ / \quad \backslash \\ 2 \times 2 \times 15 \\ / \quad \backslash \\ 2 \times 2 \times 3 \times 5 \end{array}$$

$$C.F. = 2, 3, \overset{①}{4}, \overset{②}{6}, \overset{③}{8}, \overset{④}{12}, \overset{⑤}{24}$$

- ① $2 \times 2 = 4$ } doubles
- ② $2 \times 3 = 6$ }
- ③ $2 \times 2 \times 2 = 8$ } triples
- ④ $2 \times 2 \times 3 = 12$ }
- ⑤ $2 \times 2 \times 2 \times 3 = 24$

* List all common factors using prime factors.

a) 42, 126

b) 40, 16

c) 49, 343